Appendix to the ESA Workplan Update: Proposed Label Language for Public Comment

November 2022

This appendix to the November 2022 ESA Workplan Update provides additional details on proposed label language including Bulletins Live! Two (BLT) language, FIFRA Interim Ecological Mitigation, and other label statements the EPA may consider in registration review, including PIDs and other Agency actions. Through comments on this appendix and individual PIDs in the future, EPA is seeking feedback from the public on the following issues related to this label language: feasibility, user impacts, efficacy, appropriateness (supported by accompanying data), compliance or enforcement issues, and improvements to clarify language for users while still retaining the intent and efficacy of the language.

1. Bulletins Live! Two (BLT)

As discussed in Section IV of this Workplan Update, EPA expects to regularly propose language for pesticide labels instructing the product's users to access the Bulletins Live! Two (BLT) website to obtain geographically specific mitigation for listed species or their designated critical habitat. EPA is proposing to revise the standard language referencing BLT to improve understanding of the language. EPA seeks feedback on these proposed revisions, which appear in the table below. Additionally, EPA is requesting specific feedback on the following questions:

- Is the label language below on how to obtain Bulletins through BLT clear? Is it easy to understand what actions are required of users, and when?
- Does 6 months give stakeholders enough time to plan for planting and other needs?
- If your comments suggest the answer is no for either of these questions, please include suggestions for alternative language and any appropriate data to support your suggestions. EPA also welcomes affirmative comments on the proposed revisions.

Description	Proposed Revised Label Language for Pesticide Products	Placement on Label	Criteria for Proposing Mitigation
	End Use Products		
Endangered Species Protection Requirements To be proposed for all products, excluding those • labeled/registered solely for residential use; or • where exposure is negligible or there are no toxic effects expected across uses included on a label (e.g., cattle ear tag, fly baits)	"**ENDANGERED AND THREATENED SPECIES PROTECTION REQUIREMENTS**: It is a Federal offense to use any pesticide in a manner that results in an unauthorized "take" (e.g., kill or otherwise harm) of an endangered species and certain threatened species, under the Endangered Species Act section 9. When using this product, you must follow the measures, including any timing restrictions, contained in the Endangered Species Protection Bulletin for the area where you are applying the product. Before using this product, you must obtain a Bulletin at any time within six months of the day of application. To obtain Bulletins, consult	Directions for Use, under the heading "ENDANGERED AND THREATENED SPECIES PROTECTION REQUIREMENTS"	See "Description" column

Description	Proposed Revised Label Language for Pesticide Products	Placement on Label	Criteria for Proposing Mitigation
	End Use Products		
	http://www.epa.gov/espp. For general questions or technical help, call 1-844-447-3813, or email ESPP@epa.gov."		

2. Interim Ecological Mitigation #1: Surface Water Protection Statements and Conservation Measure Pick List to Reduce Ecological Risks from Surface Water Runoff

EPA has identified through its review of FIFRA registration and registration review actions that there may be a need for additional mitigation measures to address ecological risks associated with pesticides that move off-field when they dissolve in surface water runoff. These additional measures would generally apply to pesticides with agricultural crop uses and an organic carbon partitioning coefficient (Koc) less than or equal to 1000 L/kg (highly to moderately mobile according to the United Nations Food and Agriculture Organization (FAO) classification scheme) in one soil tested. Soils across the US are varied, and pesticides may be more prone to leave the field in surface water runoff on some soils than others. To better address off-site ecological risks across all soils, and because more restrictive mitigation is typically needed to reduce pesticide transport from surface water runoff than erosion, EPA is proposing surface water runoff mitigation (instead of erosion mitigation) across all soils for pesticides that are highly or moderately mobile in one or more soils. Additional Koc criteria for one of these specific measures are described in more detail below.

These mitigation measures include surface water protection statements users would follow when precipitation occurs or is forecasted, as well as a pick list of conservation measures a grower must select from and use to reduce pesticide runoff from the field. Depending on the specific ecological risk, the benefits, and the use of the pesticide, EPA may propose one or more measures from a pick list of options to address risks. EPA will consider the user impacts of these mitigation measures when determining whether to propose and subsequently include them, as required under FIFRA. Overall, EPA intends to propose less stringent pick list mitigation when the benefits of a pesticide are higher for a given level of ecological risk. Conversely, EPA intends to propose more stringent pick list mitigation when the benefits of a pesticide are lower for a given level of risk.

The two surface water protection statements in the table below are intended to reduce the amount of pesticides that moves off a treated field due to a runoff-producing rain event. The first proposed surface water protection statement prohibits applications during rain events. This is a common-sense measure that ensures the pesticide application will be effective against the target pest while reducing ecological risks associated with pesticide movement via runoff.

The second proposed surface water protection statement prohibits applications of mobile or highly mobile non-persistent pesticides within 48-hours (two days) of a runoff-producing rain event. In a modeling exercise using the rain-restriction feature of the Pesticide in Water Calculator (PWC)[1], EPA found that a 48-hour rain restriction resulted in a 10 - 40% decrease in 1-in-10 year daily average runoff-only estimated environmental concentrations (EECs) in the EPA standard farm pond with a 30-40% decrease for the most mobile or least persistent pesticides (EPA 2022). The rain restriction provides additional time for the pesticide to degrade in soil or on foliage and meaningfully reduces the amount of the pesticide that can be transported off-field in runoff. Mobile or highly mobile in this context means pesticides with a Koc of 100 L/kg or less (mobile or highly mobile according to the FAO classification scheme) that are expected to readily move off the treated field via dissolved runoff. Non-persistent in this context means pesticides that degrade in the soil or on foliage with half-lives (amount of time needed to degrade a chemical by 50%) of less than two days. EPA expects that prohibiting applications within 48 hours of a rain event would be less effective for persistent and immobile pesticides.

The runoff reduction measure pick list in the table below includes a number of measures that reduce runoff and pesticide loads in runoff, including vegetative filter strips (minimum of 30-foot width), cover crops, field borders, and riparian buffer strips/zones (forest or herbaceous), no/reduced tillage, contour buffer strips, and vegetative barriers. These measures are expected to decrease runoff and pesticide loads in runoff by reducing channelized flow to water bodies, increasing pesticide degradation, increasing infiltration of pesticide-contaminated water into the soil, and increasing binding of pesticides to soil and vegetation. The pick list measures also include contour farming and terrace farming/field terracing, which decrease runoff flow velocity and thereby enhance infiltration of pesticide-contaminated water into the soil. Grassed waterways and grassed/vegetative ditch banks are included as options because they reduce pesticide runoff by re-routing the flow of runoff through a vegetated area, thus increasing infiltration of the pesticide-contaminated water into the soil. Sediment/water retention ponds and constructed wetlands are also included as options, because they retain runoff in a vegetated water body, increasing pesticide degradation and binding. Mulching with natural materials is included as an option because it reduces pesticide runoff by promoting binding to vegetated materials and microbial degradation. Finally, strip-cropping and alley cropping increase infiltration of pesticide-contaminated water into the soil by systematically arranging vegetation and crops such that vegetation that slows surface water runoff is alternated with crops that may not slow runoff.

The pick list measures were included based on their potential to reduce dissolved runoff. There are numerous factors that contribute to the efficacy of any one of these measures, and, for many, efficacy may vary considerably depending on those factors. As an example, the efficacy of vegetative filter strips varies depending on the type of vegetation grown in the vegetative filter strip, the density of the vegetation, the width of the vegetative filter strip, whether channelized flow paths are able to form over the width of the vegetative filter strip (Caron, Lafrance, and Auclair 2012; Krutz et al. 2005; Mickelson, Baker, and Ahmed 2003; Poletika et al. 2009), the

[1] https://www.epa.gov/pesticide-science-and-assessing-pesticide-risks/models-pesticide-risk-assessment#PWC

flow-rate, and the field to VFS ratio, (Arora, Mickelson, and Baker 2003; Boyd et al. 2003) among other factors.

Because EPA wants to ensure a consistent level of efficacy for the pick list measures when they are implemented, EPA has developed proposed descriptions for each of them. Pesticide labeling would require one or more of these measures be in place, as defined in the labeling, prior to using the pesticide product. The pick list measure descriptions proposed to be used as labeling are located in Section 4 of this appendix. They are based on descriptions developed for previous pesticide proposals or decisions and incorporate some of the feedback received during prior public comment periods. These descriptions are subject to change based on EPA's further evaluation of comments from previous proposals, as well as public comments received on this appendix. EPA intends to post these descriptions on its website, and product labels would reference the website.

EPA seeks feedback on the example label language in the table below. Additionally, EPA is requesting specific feedback on the following questions:

- Regarding the surface water protection statements, are there additional criteria for proposing mitigation that EPA should consider?
- Are the descriptions of the pick list mitigation measures in Section 4 clear? If not, please suggest alternative language.
- Are there other measures that are effective in controlling dissolved runoff that should be included in the pick list? Please include supporting data with any suggestions.

Description	Proposed Label Language for Pesticide Products	Placement on Label	Considerations for Proposing Mitigation
	End Use Products		
Surface Water Protection Statements To be considered for products delivered via liquid spray applications to crops that do not require production in flooded fields or streams.	"**SURFACE WATER PROTECTION STATEMENT** • Do not apply during rain. • Do not apply when a storm event likely to produce runoff from the treated area is forecasted (by NOAA/National Weather Service, or other similar forecasting service) to occur within 48 hours following application."	Directions for Use –Under the Restriction or Use Restriction Section	Pesticides applied to agricultural crops with Koc ≤ 1000 in one soil tested that are applied by liquid spray or granules and that have ecological risk due to dissolved runoff. Only include "storm event" bullet when Koc ≤ 100 in one soil tested, AND either aerobic metabolism or foliar degradation half-life is < 2 days Notes: • A pesticide with a Koc ≤ 100 is highly mobile in

			soil, primarily moving across and through soils in water. • An aerobic metabolism half-life is the time it takes for half of the applied pesticide to degrade in soil. • A foliar degradation half-life is the time required for half the concentration of the pesticide to be reduced, degrade, metabolize, or otherwise dissipate after application to foliage.
Dissolved Runoff Mitigation To be considered for products delivered via liquid spray or granular applications to agricultural crops that do not require production in flooded fields or streams.	"**RUNOFF MITIGATION** Users of this product must access **[website address]** and follow the instructions in the descriptions for one of the following mitigation measures: • Vegetative filter strip (30 ft minimum width) • Field border • Field terracing/ contour buffer strips • Contour farming • Cover cropping • No/reduce tillage • Grassed waterways • Riparian buffer zone/ riparian herbaceous zone • Vegetative/grassed ditch banks • Runoff retention pond/ water and sediment control basin/ sediment catchment basin/ constructed wetland • Strip cropping • Vegetative barriers • Mulching with natural materials • Alley cropping"	Directions for Use – Under the Restriction or Use Restriction Section	Pesticides with Koc $\leq$ 1000 in one soil tested that are applied by liquid spray or granules and that have ecological risk due to dissolved runoff. Note: • A pesticide with a Koc < 1000 readily moves across and through soils in water.

References for Section 2

Arora, Kapil, Steven K Mickelson, and James L Baker. 2003. "Effectiveness of Vegetated Buffer Strips in Reducing Pesticide Transport in Simulated Runoff." *Transactions of the ASAE* 46 (3): 635.

Boyd, Paul M, James L Baker, Steven K Mickelson, and Syed I Ahmed. 2003. "Pesticide Transport with Surface Runoff and Subsurface Drainage through a Vegetative Filter Strip." *Transactions of the ASAE* 46 (3): 675.

Caron, Emmanuelle, Pierre Lafrance, and Jean-Christian Auclair. 2012. "Temporal Evolution of Atrazine and Metolachlor Concentrations Exported in Runoff and Subsurface Water with Vegetated Filter Strips." *Agronomy for Sustainable Development* 32 (4): 935–43.

Krutz, LJ, SA Senseman, RM Zablotowicz, and MA Matocha. 2005. "Reducing Herbicide Runoff from Agricultural Fields with Vegetative Filter Strips: A Review." *Weed Science* 53 (3): 353–67.

Mickelson, SK, JL Baker, and Syed I Ahmed. 2003. "Vegetative Filter Strips for Reducing Atrazine and Sediment Runoff Transport." *Journal of Soil and Water Conservation* 58 (6): 359–67.

Poletika, NN, PN Coody, GA Fox, GJ Sabbagh, SC Dolder, and J White. 2009. "Chlorpyrifos and Atrazine Removal from Runoff by Vegetated Filter Strips: Experiments and Predictive Modeling." *Journal of Environmental Quality* 38 (3): 1042–52.

US EPA. 2022. "Preliminary Analysis of the Effectiveness of a 48-Hour Rain Restriction to Reduce Pesticide Runoff."

3. Interim Ecological Mitigation #2: Surface Water Protection Statement and Conservation Measure Pick List to Reduce Ecological Risks from Soil Erosion

EPA also intends to more regularly propose mitigation measures to address ecological risks associated with transport of pesticides off the field through soil erosion. These measures would apply to pesticides with agricultural crop uses and an Koc over 1000 L/kg, which is considered slightly mobile, hardly mobile, or immobile (according to the FAO classification scheme) in all soils tested.

These mitigation measures include a surface water protection statement users would follow when precipitation occurs, as well as a pick list of conservation measures a grower must select from and use to reduce pesticide runoff from the field. Depending on the specific ecological risk, the benefits of the pesticide, and the use, EPA may propose one or more measures from a pick list of options to address risks. EPA will consider the user impacts of these mitigation measures when determining whether to propose and subsequently require them, as required under FIFRA. Overall, EPA intends to propose less stringent pick list mitigation when the benefits of a pesticide are higher for a given level of ecological risk. Conversely, EPA intends to propose more stringent pick list mitigation when the benefits of a pesticide are lower for a given level of risk

The surface water protection statement in the table below is intended to reduce the amount of pesticide that moves off a treated field via erosion during a rain event. Applying pesticides when it is not raining is a common-sense measure that ensures the pesticide application will be effective against the target pest while reducing ecological risks from erosion.

The baseline pick list for soil erosion is the same as for surface water runoff, with the exception that the minimum vegetative filter strip width for erosion is 20 feet instead of the 30-foot minimum for runoff. This narrower vegetative filter strip may be adequate to address erosion

(off-site movement of pesticide bound to sediment) because sediment is more easily retained in a vegetative filter strip than surface water runoff (Dosskey, Michael G, MJ Helmers, and Dean E Eisenhauer. 2008). The actual proposed strip width may be greater than 20 feet for some pesticides, as 20 feet is the minimum to effectively address erosion. Vegetative filter strips, cover crops, field borders, and riparian buffer strips/zones (forest or herbaceous), no/reduced tillage, contour buffer strips, vegetative barriers are expected to decrease off-field movement of pesticides through erosion by reducing channelized flow to a water body, increasing sedimentation, increasing binding of pesticides to soil and vegetation, and increasing pesticide degradation. Contour farming and terrace farming/field terracing decrease erosion by decreasing runoff flow velocity, which increases sedimentation. Grassed waterways and grassed/vegetative ditch banks reduce off-field movement of pesticides through erosion by re-routing the flow of runoff through a vegetated area, which increases sedimentation. Sediment/water retention ponds and constructed wetlands capture agricultural effluent and allow for sedimentation, binding, and degradation in a constructed environment. Mulching with natural materials reduces pesticide transport via erosion by reducing off-site movement of soil, promoting binding to vegetated materials, and by promoting microbial degradation. Finally, strip-cropping and alley cropping increase sedimentation by systematically arranging vegetation and crops such that vegetation promoting sedimentation is alternated with crops that are less likely to reduce erosion.

The above pick list measures are included based on their potential to reduce erosion. As with surface water runoff, there are numerous factors that contribute to the efficacy of any one of these measures. The data EPA reviewed demonstrate that the efficacy of a particular practice can vary considerably.

Because EPA wants to ensure a consistent level of efficacy for the pick list measures when they are implemented, EPA has developed proposed descriptions for each of them. Pesticide labeling would require one or more of these measures be in place, as defined in the labeling, prior to using the pesticide product. The proposed descriptions appear in Section 4 of this appendix. They are based on descriptions developed for previous pesticide proposals or decisions and incorporate some of the feedback EPA received during prior public comment periods. These descriptions are subject to change based on EPA's further evaluation of public comments from previous proposals and on this appendix. EPA intends to post these descriptions on its website, and product labels would reference the website.

EPA seeks feedback on the example label language in the table below. Additionally, EPA is requesting specific feedback on the following questions:

- Are the descriptions of the pick list mitigation measures in Section 4 clear?
- Are there other measures that are effective in controlling erosion that should be considered?
- Although artificial mulches are commonly used in agriculture, EPA is limiting mulches to natural materials. Should EPA also consider artificial mulches as a pick list measure? If so, to what extent do artificial mulches reduce erosion? Please provide references for supporting data.

Description	Proposed Label Language for Pesticide Products	Placement on Label	Considerations for Proposing Mitigation
	End Use Products		
Surface Water Protection Statements To be considered for products delivered via liquid spray applications to crops that do not require production in flooded fields or streams.	"**SURFACE WATER PROTECTION STATEMENT** • Do not apply during rain."	Directions for Use –Under the Restriction or Use Restriction Section	Pesticides applied to agricultural crops with Koc > 1000 in all soils that are applied by liquid spray or granules and that have ecological risk due to soil erosion (movement of the pesticide when it sorbs to soil). Note: A pesticide with Koc's > 1000 is strongly adsorbed onto soil and organic matter.
Erosion Mitigation for Soil-sorbed Pesticides To be considered for products delivered via liquid spray applications to crops that do not require production in flooded fields or streams.	"**EROSION MITIGATION** Users of this product must access the **[website address]** and follow the instructions in the descriptions for one of the following mitigation measures: • Vegetative filter strip (20 ft minimum width) • Field border • Field terracing/ contour buffer strips • Contour farming • Cover cropping • No/reduce tillage (residue management) • Grassed waterways • Riparian buffer zone/ riparian herbaceous zone • Vegetative/grassed ditch banks • Runoff retention pond/ water and sediment control basin/ sediment catchment basin/ constructed wetland • Strip cropping • Vegetative barriers • Mulching with natural materials • Alley Cropping"	Directions for Use – Under the Restriction or Use Restriction Section	Pesticides applied to agricultural crops with Koc > 1000 in all soils that are applied by liquid spray or granules and that have ecological risk due to soil erosion (movement of the pesticide when it sorbs to soil). Note: A pesticide with Koc's > 1000 is strongly adsorbed onto soil and organic matter.

Reference for Section 3

Dosskey, Michael G, MJ Helmers, and Dean E Eisenhauer. 2008. "A Design Aid for Determining Width of Filter Strips." *Journal of Soil and Water Conservation* 63 (4): 232–41.

4. Interim Ecological Mitigation #1 and #2: Runoff and Erosion Mitigation Pick List Descriptions

This section describes the runoff and erosion mitigation pick list measures referenced earlier. These descriptions identify the minimum requirements (indicated in **bold** text) for each measure. The descriptions do not provide the prescriptive design elements for these measures. To better understand the descriptions, it may be useful for individuals to first understand the basics of sheet flow or concentrated flow. Sheet flow is when water flows in a thin layer. The greater the distance that water must flow (and based on field topography), the more that sheet flow will become concentrated flow, which can lead to significant sediment erosion.

Because implementation of specific mitigation measures varies by crop and location, pesticide users adopting one or more of these measures would be encouraged to consult with local specialists experienced in planning, building, and maintaining these mitigation measures. Additionally, some measures may have specific state and/or local laws and regulations that must be followed.

The descriptions of the mitigation measures included in this appendix are adapted from the National Pollutant Discharge Elimination System (NPDES) Permit Writers' Manual for CAFOs and literature listed under "Description References" below. For further discussion and consideration of the application of these mitigation measures, see EPA's webpage on non-point source pollution reduction in agriculture and National Management Measures to Control Nonpoint Pollution from Agriculture (Chapter 4).

Vegetative Filter strips (on-field)

Filter strips are managed on-field areas of grass or other permanent herbaceous vegetation that intercept and disrupt flow of runoff, trap sediment, and reduce pesticide concentrations in water. Generally, a filter strip can vary in width (typically 20 to 120 feet wide). However, minimal distances for effective vegetative filter strips are 20 feet for sediment runoff and 30 feet for water runoff. Filter strips are usually planted with native grasses and perennial herbaceous plants. Nutrients, pesticides, and soils in the runoff water are filtered through the grass, potentially adsorbed by the soil, and potentially taken up by the plants. The effectiveness of filter strips to reduce pesticide loading into an adjacent surface water body depends on many factors, such as topography, field conditions, hydrologic soil group, antecedent moisture conditions, rainfall intensity, properties of the pesticide, application methods, width of the filter strip, and types of vegetation within. Therefore, risk reductions obtained from the use of filter strips may vary. Its use can support or connect other buffer practices within and between fields.

Establish and maintain vegetative filter strips such that the area immediately upslope must eliminate or substantially reduce concentrated flow and promote surface sheet flow runoff.

The design and maintenance must consider a 10-year lifespan for the vegetative filter strip. Where there is water moving across a field that is likely to move soil, structural elements must be added within the field to prevent erosion and promote sheet flow across the filter strip.

This may be most easily achieved by aligning rows as closely as possible so that they are perpendicular to the slope. Use of water bars or berms to break up the concentrated flow and divert concentration flow back into the field is another useful tool to promote sheet flow. Reduced tillage practices, especially near the field border strip, will result in less sediment loading and the best performance of a vegetative filter strip.

Permanent filter strip vegetative plantings must be harvested or mowed as appropriate (producers enrolled in conservation programs need to follow specific mowing and maintenance restrictions) to encourage dense growth and maintain upright growth.

The maintenance program must keep vegetation tall in spring and early summer to help slow runoff flow, maximize disruption of concentrated flow, and reduce the chance of structural damage. Regular maintenance must also include inspection after major storms, removal of excess trapped sediment, and repair of eroding areas.

Grassed Waterways (on-field and off-field)

Grassed waterways are natural or constructed vegetated channels designed to direct surface water, flowing at non-erosive velocities, to an outlet that is not likely to erode (e.g., another vegetated channel, an earth ditch). Grassed waterways are used to prevent significant erosion. In concentrated flow areas, grassed waterways can act as an important component of erosion control by slowing the flow of water and filtering sediment.

Other benefits of grassed waterways include the safe disposal of runoff water, improved water quality, improved wildlife habitat, reduced damage associated with sediment, and an improvement in overall landscape aesthetics. Grassed waterways are usually planted with perennial grasses, preferably native species where possible. Some common grass species used in waterways are Timothy, tall fescue, perennial ryegrass and Kentucky bluegrass.

The user must establish a maintenance program to maintain waterway capacity, vegetative cover, and outlet stability. Do not damage vegetation by machinery, herbicides, or erosion. Grassed waterways must be inspected regularly, especially following heavy rains. Any damage or disruptions must be repaired immediately by filling, compacting, and reseeding. Sediment deposits must be removed to maintain capacity of grassed waterway. Maintain a healthy, dense, and functional grass strip. Runoff outflow must be directed to a system such as another grassed waterway, an earthen ditch, a grade-stabilization structure, a filter strip, water or sediment basin, or other suitable outlet with adequate capacity to handle the runoff and prevent significant erosion.

Field Border (off-field)

A field border is defined as a strip of permanent vegetation established at the edge or around the perimeter of a field. A field border can reduce runoff-based erosion and protect soil and water quality by slowing the flow of water, dispersing concentrated flow, and increasing the chance for soil infiltration.

Use of a field border can support or connect other buffer practices within and between fields.

Establishment and maintenance of the field border and land immediately upslope of the border must aim to eliminate or significantly reduce concentrated water flow and promote surface sheet flow runoff.

To prevent significant erosion within a field border, **concentrated flow must be broken up or redirected**. This may be achieved by aligning the field border and planting rows as closely as possible in a direction that is perpendicular to the slope. Use of water bars or berms to divert concentrated flow back into the field is another useful tool to break up the concentrated flow and promote sheet flow into the border.

A field border must have a minimum width 30 feet for the purpose of reducing pesticides in runoff and be composed of a permanent dense vegetative stand. This stand must be composed of stiff upright grasses. Non-woody flowering plants may also be included in a well-managed border.

Reduced tillage practices, especially near the field border strip, will result in less sediment loading and the best performance of the field border in reducing runoff.

Inspect field borders after major storms and repair eroding areas.

Cover Crop (on-field)

A cover crop is a close-growing crop that temporarily protects the ground from wind and water erosion. Common cover crops include cereal rye, oats, clover, crown vetch, and winter wheat or combinations of those crops. Cover crops are most often used when low residue-producing crops are grown on erodible land. Cover crops increase soil stability, reduce runoff, and reduce erodibility of field soils.

The cover crop must be planted and remain on the field up to the field preparation for planting the crop.

Crop insurance allows for cover crop flexibilities and producers should be mindful of those flexibilities and guidelines.

Planting directly into a standing terminated, mowed, or rolled cover crop will provide the greatest benefit for reducing runoff. Cover crops may be used in conjunction with reduced

tillage practices to further reduce surface runoff from production fields.

Contour Buffer Strips (on-field)

Contour buffer strips are strips of permanent herbaceous vegetation, primarily of perennials such as grass, alternated with wider cultivated strips that are farmed on the contour. Contour buffer strips help to manage runoff and trap sediment. Because the vegetated buffer strip is established on the contour, runoff flows evenly across the entire surface of the strip, reducing water and sediment erosion. The vegetation slows runoff, helping the water to soak into the soil and reducing erosion. Sediment, nutrients, and other pollutants are filtered from the runoff as it flows through the strip, thereby improving surface water quality.

The specific recommendations for establishing buffers vary from site to site.

Contour buffer strip widths must be a minimum of 15 feet. Wider distances may be appropriate based on variables such as slope, soil type, field conditions, climate, and erosion potential. Contour buffer strips are unsuitable in fields where irregular, rolling topography makes following a contour impractical.

To ensure maximum performance, **the integrity of the buffer must be maintained for the entire width and length, including:**

- The contour buffer must be harvested or mowed, reseeded, and fertilized as necessary to maintain plant density and vigorous plant growth.
- Vegetation must be kept tall in spring and early summer to help slow runoff flow, maximize disruption of concentrated flow, and reduce the chance of structural damage.
- Regular maintenance must also include inspection after major storms, removal of trapped sediment, and repair of eroding areas.

Contour Farming (on-field)

Contour farming is the use of ridges and furrows formed by tillage, planting, and other farming operations following the contour to change the direction of runoff from directly downslope to across the slope. The disruption of downslope flow slows the runoff velocity and allows for more time for runoff to infiltrate the field soils, thereby reducing runoff.

The effectiveness of contour farming to reduce soil erosion and increase infiltration of runoff is dependent on several factors including the amount of rainfall, the grade and height of row ridges, the steepness and length of the slope, the crop residue and surface roughness, and the soil hydrologic group.

Contour farming is an option on slopes between 2% and 10%, with a minimum ridge height of 1 inch, in areas with 10-year rain events less than 6.5 inches/24 hours, **and with a**

length of slope between 100 and 400 feet.

In areas with heavier rainfall events, and/or fields with steeper or longer slopes, the function of the ridges to hold back the runoff is lessened and may result in structural failure along the contour. In those cases, the efficacy of this practice is potentially compromised.

Establish and maintain the direction of rows as close to the angle of the contour as possible.

Coupling the practice with reduced tillage practices will result in the best performance of contour farming.

Contour Strip Cropping (on-field)

In contour strip cropping, a field is managed with planned rotations of row crops, forages, small grains, or fallow in a systematic arrangement of equal width strips following the contour across a field. Crops are typically arranged so that a strip of grass or forage crop (low erosional risk because of their fibrous root system) is alternated with a strip of row crop (high erosional risk; e.g., corn). The crops are planted across the slope of the land, as in contour buffer strips. This practice differs from contour buffer strips in that it allows for crops to be planted across 100% of the field area.

Plant row crops on less than half the field and, at a minimum, 50% of the slope must be planted with low erosional risk plants (e.g., grass plants because of their fibrous root system).

The low erosional risk crops reduce erosion, slow runoff water, and trap sediment entering through runoff from upslope areas. This practice combines the benefits of contouring and crop rotation.

Contour strip cropping is not as effective if the row crop strips are too wide and **are an option on slopes of ≤10%. Establish and maintain the rows as close to the contour as possible.**

Coupling the practice with reduced tillage practices will result in the best performance of contour strip cropping.

Terrace Farming (on-field)

Terraces are described as a stair-stepping technique of creating flat or nearly flat crop areas along a gradient. They can be constructed as earth embankments or a combination of ridge and channel systems. A terrace is an earthen embankment that is built across a slope to intercept and store water runoff. Some terraces are built level from end to end to contain water used to grow crops and recharge groundwater. Others, known as gradient terraces, are built with some slope or grade from one end to the other and can slow water runoff. Both help to reduce soil erosion by slowing the velocity of runoff and increasing the time for water

infiltration. On the field, terraces can be used as a part of an overall system based on the topography of the land. Additionally, an earthen ridge or terrace can be constructed across the slope upgrade from a field area to prevent runoff from entering the area or to direct runoff from one area of production to a common runoff collection area. Reduced tillage practices will result in less sediment loading and the best performance of a terraced farming system.

The ends of terraces, including turnrows, must be structured and maintained to prevent concentrated flow from damaging the function of the terrace. If runoff outflows are necessary, the runoff must be directed to a system such as a grassed waterway, a grade-stabilization structure, a filter strip, water or sediment basin, or other suitable outlet with adequate capacity to handle the runoff and prevent gully formation.

Strip Cropping

In strip cropping, a field is managed with planned rotations of row crops, forages, small grains, or fallow in a systematic arrangement of equal width strips. Crops are typically arranged so that a strip of grass or forage crop (low erosional risk because of their fibrous root system) is alternated with a strip of row crop (high erosional risk; e.g., corn). This practice differs from contour strip cropping in that rows do not need to be planted along a contour, which allows strip cropping to be used on land without a contour.

Alternate strips of row crops considered high erosion risk with strips. A minimum of 50% of the field must be planted with low erosional risk crops or sediment trapping cover.

The low erosional risk crops reduce erosion, slow runoff water, and trap sediment entering through runoff.

Strip cropping is not as effective if the row crop strips are too wide and **must only be implemented on slopes ≤10% slope**.

Coupling the practice with reduced tillage practices will result in the best performance of strip cropping.

No Tillage/Reduced Tillage (on-field)

This category of practices includes conservation tillage practices such as no-till, strip-till, ridge-till, and mulch-till.

Each of these involves year-round management of the amount, orientation and distribution of crop and other plant residue on the soil surface, while limiting the soil-disturbing activities used to grow and harvest crops in systems where the field surface is tilled, raked, or left undisturbed prior to planting. **For each tillage practice below, more than 30% of the surface must remain covered with plant residue.**

- No-till/strip till: In these systems, the soil is left undisturbed from harvest to planting. Planting or drilling is accomplished using disc openers, coulter(s), and row cleaners. Weeds are controlled primarily with crop protection products.
- Strip till: In these systems, the soil is left undisturbed from harvest to planting except for strips up to one-third of the row width. (The strips could involve only residue disturbance or could include soil disturbance.) Planting or drilling is accomplished using disc openers, coulter(s), row cleaners, in-row chisels, or rototillers; cultivation can be used for emergency weed control. Other common terms used to describe strip-till, include row-till, and slot-till.
- Ridge-till: Ridge-till is a system in which seeds are planted into a seedbed prepared by scraping off the top of the ridge. The scraped-off ridge usually provides an excellent environment for planting. Ridges are formed during cultivation of the previous year's crop. Ridge-till operations consist of planting in the spring and at least one cultivation to recreate the ridges for the next year. Rows remain in the same place each year and any crop residue on the ridges at planting is pushed between the rows.
- Mulch-till: This system uses full-width tillage involving one or more tillage trips, which disturbs the entire soil surface but leaves a uniform layer on crop residue on the soil surface and is done before or during planting. Tillage tools such as chisels, field cultivators, discs, sweeps, or blades are used. Weeds are controlled with crop protection products or cultivation or both.

Vegetative Barriers (on-field)

Vegetative barriers are narrow, permanent strips of stiff-stemmed, erect, tall and dense vegetation established in parallel rows on the contour of fields to reduce soil erosion and sediment transport. These buffers function similar to contour buffer strips and may be especially effective in dispersing concentrated flow, thus increasing sediment trapping and water infiltration. Because the vegetative barrier, typically comprised of grasses, is established on the contour, runoff is restricted, reducing sheet flow and erosion from concentrated flow. The grass slows runoff, helping the water soak into the soil and reducing erosion. The specific recommendations for establishing the vegetative barrier vary from site to site.

Barrier widths are determined by variables such as slope, soil type, field conditions, climate, and erosion potential but **must be a minimum of 3 feet wide**. To ensure maximum performance, the pesticide user **must maintain the integrity of the barrier for the entire width and length, including:**

- The barrier must be harvested, mowed, reseeded, and fertilized as necessary to maintain plant density and vigorous plant growth.
- The maintenance schedule must keep vegetation tall in spring and early summer to help slow runoff flow, maximize disruption of concentrated flow, and reduce the chance of structural damage.
- Regular maintenance must also include inspection after major storms, removal of trapped sediment, and repair of eroding areas.

Vegetated Ditch Banks

A vegetated ditch bank is a sloped channel, planted with vegetation (grass or otherwise) that transports surface water at such a rate that it does not erode soil to an outlet that is not likely to erode.

- The bottom width of the (trapezoidal) vegetated ditch bank must be less than 100 ft.
- The side slope of the vegetated ditch bank must be flatter than a ratio of 2:1 horizontal: vertical.
- The depth/capacity of the vegetated ditch bank must accommodate peak runoff volume expected from a 10-year frequency, 24-hour duration storm.
- Vegetation must be selected such that the vegetation will achieve an adequate density, height, and vigor, and is stable to peak runoff volume expected from the 10-year frequency, 24-hour duration storm.

Maintenance must include ensuring a healthy grassed or vegetative surface within the vegetated ditch bank, inspections after major storms and repair to damaged areas, as well as removal and redistribution of excess sediment back to the field.

Riparian buffers (herbaceous and forest buffers)

These buffers are similar in that they reduce erosion and, at minimum, maintain water quality. **Vegetation for both buffers must be tolerant to intermittent flooding and saturated soil and be managed until established in the transitional zone between a field and an aquatic habitat. Herbaceous buffers must consist of non-woody vegetation and must have a minimal width of 2.5 times the width of the stream or 35 feet if adjacent to a larger water body. Forest buffers must be planted to trees and shrubs and must have a minimal width of 35 feet from the waterbody.**

Management of Surface and Subsurface Water on the Field

There are several conservation practices that involve management of surface and subsurface water on the field. However, for any of these practices to be an acceptable runoff mitigation strategy, **a sediment basin must be used in conjunction with practices managing surface and subsurface runoff (described below). Growers who wish to use any of these practices must follow all state and local laws and regulations and adhere to any requirements associated with conservation programs in which they are participating.**

Sediment basins: Sediment basins are used to capture runoff (with sediment) leaving the field, such that sediment has adequate time to settle out of the water column. Sediment basins are constructed by creating an embankment, excavating a dugout, or both such that the basin has an outlet. Basins are not stand-alone practices and should be used in conjunction with other runoff/erosion practices like:

- Subsurface drainage: This is a practice where an underground pipe is installed to collect and move excess water from a field.

- Tailwater recovery systems: These systems are intended to collect, move, and temporarily store runoff water so that it can be reused later.
- Drainage water management: This conservation practice involves managing the flow of surface and subsurface drainage systems by changing the elevation of outflow.

Water and sediment control basins: This practice is effective for managing runoff, trapping sediment, and reducing gully erosion. Basins are described as an earthen embankment or basin, or a combination ridge and channel, constructed across the slope of a minor drainage area in a field. Control basins must also have an outlet so that water can be released in a manner that does not lead to damage.

Ponds are similar in function to sediment basins, as they can allow time for the sediment to settle from sediment-laden runoff drained from a field. They are also similar in design to sediment basins but have a dam as an outlet.

Constructed wetlands: Water-tolerant vegetation is used to create a manmade wetland that can provide for the biological treatment of water to improve water quality.

Maintenance of basins and ponds must include the following: ensuring a healthy vegetative surface to maintain the structural integrity of the basin/pond; inspections after major storms, repair to damaged areas, and removal of any obstructions that interfere with flow around inlets; and removal and redistribution of excess sediment back to the field.

Mulching with Natural Materials

This practice is used to reduce runoff and erosion. Natural mulches should be applied such that mulch provides **a minimum of 70 percent ground cover**. The **minimum depth of mulch must be 2 inches** such that the mulch will remain during heavy rain or winds. Vegetation-based mulches must have a carbon:nitrogen ratio greater than 20:1. If mulch needs to be held in place, appropriate measures must be used (e.g., tacking, crimping) so that the mulch remains on the field. **The mulch must be periodically inspected to ensure that the mulch is intact and repair/reinstall mulch as needed**.

Alley Cropping

Alley cropping is effective at reducing surface water runoff and erosion. This practice involves trees or shrubs being planted in single or multiple rows where other commodities (i.e., agronomic or horticultural crops or forages) are planted in the alleys of the trees or shrubs. **Trees or shrubs must be planted on or near the contour. The vegetation in the alleys must be established in conjunction with the trees/shrubs** to be effective against water erosion. For wind erosion, tree/shrubs must be planted perpendicular to erosive wind patterns. Additionally, the species of trees/shrubs planted must have deep root systems that assist in water infiltration and rapid growth rates. When possible, growers must adopt no-till/reduced tillage practices. **During the period of establishment, tree/shrubs must be maintained/replaced as needed.**

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5. Interim Ecological Mitigation #3: Reducing Ecological Risks from Spray Drift

For many years, EPA has proposed and subsequently required application restrictions to reduce spray drift. These have commonly included windspeed restrictions, minimum droplet size restrictions, and release height restrictions. In instances where ecological risks of aerial applications have been high and these risks outweighed the benefits, EPA has proposed and subsequently required aerial application prohibitions. The table below includes example language for these measures that is regularly included in EPA decisions. EPA expects to continue to propose this language in its applicable regulatory actions.

In addition to these measures, EPA intends to propose spray drift buffers more regularly, as the benefits warrant, to further reduce ecological risks associated with spray drift. These include spray drift buffers to aquatic habitats when there is risk to non-target aquatic species due to spray drift, as well as spray drift buffers to wildlife conservation areas when there is risk to non-target terrestrial species due to spray drift. EPA is also proposing a few exemptions to these spray drift buffers. The first exemption is when a10-foot windbreak is used. For this exemption to apply, the windbreak must have single to multiple rows of trees and shrubs planted linearly between the field and the protected area in a manner that fully partitions the two areas. When established in this manner, a 10-foot windbreak would substantially reduce pesticide deposition reaches the protected habitat.

The second exemption is for pesticide applications made for conservation purposes in or around aquatic habitats. While EPA wants to assure that pesticide exposures do not adversely impact non-target species in aquatic habitats, there are many instances where pesticides are useful to

protecting species in and around aquatic habitats. This exemption benefits species by allowing those applications.

The third exemption is for pesticide applications made by conservation area personnel in the conservation area. Similar to the second exemption, EPA understands that public and private conservation area landowners may need to use pesticides to further conservation goals and are not likely to use pesticides in ways that are detrimental to non-target wildlife in the conservation area.

The fourth exemption is for landowners of applicators who have completed an ESA section 7 consultation with the FWS and/or NMFS and is using a pesticide product consistent with that consultation. In this instance, pesticide applications consistent with the consultation should adequately protect non-target wildlife from pesticide exposures.

The efficacy of spray drift mitigation, including spray drift buffers, is well-established quantitatively. Based on the combinations of application restrictions and spray drift buffer requirements described in the table below, EPA expects pesticide deposition resulting from spray drift to be reduced by 50% to 90% for aerial applications, 90% to 99% for ground boom applications, and 60% to 90% for airblast applications.

EPA seeks feedback on the example label language for this mitigation detailed in the table below. Additionally, EPA is requesting specific feedback on the following questions:

- EPA is exploring using wind-directional buffers more broadly as they are less impactful to users by reducing the instances where spray drift buffers are needed to minimize ecological risk. A wind-directional buffer means that a user need only apply a drift buffer in the direction the wind is blowing, rather than all sides of a fields. Should EPA shift to requiring wind-directional buffers to reduce spray drift associated with aerial, ground boom, and/or airblast applications? Why or why not? Please be specific and support your position with data where available. Further, are there circumstances where it is more desirable to have wind-directional buffers than others? Historically, to address ecological risk (and human health risk) under FIFRA, EPA has required spray drift buffers that apply to all sides of a field that are adjacent to a water body and/or conservation area, regardless of the wind direction. More recently, however, wind-directional buffers have been proposed as mitigation measures to address listed species exposure (e.g., methomyl PID) and have been included in FWS and NMFS biological opinions for malathion. The spray drift buffers in the table below apply to all sides of a field that are adjacent to aquatic habitats and/or conservation areas; however, pending public comment on wind-directional drift buffers, EPA may propose wind-directional buffers. Example language for a wind-directional buffer would be the following:
    - "Do not apply within [X] feet of aquatic habitats (such as, but not limited to, lakes, reservoirs, rivers, permanent streams, wetlands or natural ponds, estuaries, and commercial fish farm ponds) *when the wind is blowing toward the aquatic habitat*."

- "Do not apply within [X] feet of any conservation areas (e.g., public lands and parks, Wilderness Areas, National Wildlife Refuges, reserves, conservation easements) *when the wind is blowing toward the conservation area*."
- Exemptions for the 10-ft windbreak, applications for conservation purposes, and applications covered by a completed ESA consultation would still apply to wind-directional buffers.

- Should EPA consider reduced distances for spray drift buffers when other drift reduction technology is used (e.g., drift reducing agents/adjuvants)? If so, to what extent do other drift reduction technologies reduce spray drift such that buffer distances can be reduced? Please provide references for supporting data.
- With regard to spray drift buffers for conservation areas, is the list of examples of conservation areas representative of areas to be protected? Do you have suggestions for alternative or additional descriptions?

Description	Proposed Label Language for Pesticide Products	Placement on Label	Considerations for Proposing Mitigation
	End Use Products		
Application Method Prohibition (*e.g.*, aerial) *Note:* EPA has regularly proposed and subsequently required this language on labels when it has determined that the risks of aerial applications outweigh the benefits.	• "Do not apply through aerial application" or • "Do not apply spray via aerial application"	Restrictions Section Under Directions for Use	Pesticides applied to agricultural crops resulting in high ecological risks from aerial spray drift where there are low benefits to the use of the pesticide via aerial application.
Spray Drift Management Application Restrictions To be considered for products that are applied as liquid with aerial equipment. *Note:* EPA has regularly required this language on labels consistently over the past several years.	**"MANDATORY SPRAY DRIFT MANAGEMENT** **<u>Aerial Applications</u>**: • Do not apply during temperature inversions. • Do not release spray at a height greater than 10 ft above the ground or vegetative canopy, unless a greater application height is necessary for pilot safety. • Applicators must select nozzle and pressure that deliver medium or coarser droplets in accordance with American Society of Agricultural & Biological	Directions for Use, in a box titled "Mandatory Spray Drift Management" under the heading "Aerial Applications" Placement for these statements should be in general directions for use, before any use-specific directions for use.	Pesticides applied to agricultural crops via liquid spray using aerial equipment with ecological risk due to spray drift.

Description	Proposed Label Language for Pesticide Products	Placement on Label	Considerations for Proposing Mitigation
	End Use Products		
	Engineers Standard 641 (ASABE S641). [For 15 mph windspeed restriction] • If the windspeed is 10 miles per hour or less, applicators must use ½ swath displacement upwind at the downwind edge of the field. When the windspeed is between 11-15 miles per hour, applicators must use ¾ swath displacement upwind at the downwind edge of the field. [For 10 mph windspeed restriction] • Do not apply when windspeeds exceed 10 miles per hour at the application site. • The boom length must not exceed **[EPA to choose 65% or 75% based on risks and benefits]** of the wingspan for airplanes or **[EPA to choose 75% or 90% based risks and benefits]** of the rotor blade diameter for helicopters. OR • Do not apply when wind speeds exceed 15 mph at the application site. If the windspeed is greater than 10 mph, the boom length must be 65% or less of the wingspan for fixed wing aircraft and 75% or less of the rotor diameter for helicopters. Otherwise, the boom length must be 75% or less of the wingspan for fixed-wing aircraft and 90% or less of the rotor diameter for helicopters."		
Spray Drift Management Application Restrictions	**"MANDATORY SPRAY DRIFT MANAGEMENT** **<u>Airblast Applications:</u>**	Directions for Use, in a box titled "Mandatory Spray Drift Management" under the heading	Pesticides applied to agricultural crops via liquid spray using airblast equipment

Description	Proposed Label Language for Pesticide Products	Placement on Label	Considerations for Proposing Mitigation
	End Use Products		
To be considered for products that are applied as liquid with airblast equipment *Note:* EPA has regularly required this language on labels consistently over the past several years.	• Sprays must be directed into the canopy. • Do not apply when wind speeds exceed **[10 or 15]** miles per hour at the application site. • User must turn off outward pointing nozzles at row ends and when spraying outer row. • Do not apply during temperature inversions."	"Airblast Applications"	with ecological risk due to spray drift.
Spray Drift Management Application Restrictions To be considered for products that are applied as liquid with ground boom equipment *Note:* OPP EPA has regularly required this language on labels consistently over the past several years.	**"MANDATORY SPRAY DRIFT MANAGEMENT** **<u>Ground Boom Applications:</u>** • Do not release spray at a height greater than **[typically 2-3 ft]** feet above the ground or crop canopy. • Applicators must select nozzle and pressure that deliver medium or courser droplets in accordance with American Society of Agricultural & Biological Engineers Standard 572 (ASABE S572). • Do not apply when wind speeds exceed **[10 or 15]** mph at the application site. • Do not apply during temperature inversions."	Directions for Use, in a box titled "Mandatory Spray Drift Management" under the heading "Ground Boom Applications"	Pesticides applied to agricultural crops via liquid spray using ground boom equipment with ecological risk due to spray drift.
Spray Drift Buffer to Aquatic Habitats To be considered for products that are applied as liquid with aerial (except Ultra Low Volume/ULV applications for mosquitocides), groundboom, or airblast equipment	Aerial (non-ULV): • "Do not apply within **[typically 50-150]** feet of aquatic habitats (such as, but not limited to, lakes, reservoirs, rivers, permanent streams, wetlands or natural ponds, estuaries, and commercial fish farm ponds). Ground: • "Do not apply within **[typically 15-50]** feet of aquatic habitats (such as, but not limited to, lakes, reservoirs, rivers, permanent	Directions for use – Under the Restriction or Use Restriction Section	Pesticides applied to agricultural crops via liquid spray with aquatic risk due to spray drift.

Description	Proposed Label Language for Pesticide Products	Placement on Label	Considerations for Proposing Mitigation
	End Use Products		
	streams, wetlands or natural ponds, estuaries, and commercial fish farm ponds). When using a hooded spray boom, do not apply within **[10-30]** feet of these protected areas." Airblast: • "Do not apply within **[typically 15-25]** feet of aquatic habitats (such as, but not limited to, lakes, reservoirs, rivers, permanent streams, wetlands or natural ponds, estuaries, and commercial fish farm ponds)." All Application Methods Above: • "Applications are exempted from this spray drift buffer requirement when: 1) A 10-ft high windbreak is established between the field and the aquatic habitat. For this exemption to apply, the windbreak must have single to multiple rows of trees and shrubs planted linearly between the field and the aquatic habitat in a manner that fully partitions the two areas; 2) The application is conducted for conservation purposes (e.g., to control invasive species) by federal, state, or local personnel or persons under their direct supervision; or 3) The landowner or applicator has completed an ESA section 7 consultation with U.S. Fish and Wildlife Service and/or the National Marine Fisheries Service on the use of the product."		

Description	Proposed Label Language for Pesticide Products	Placement on Label	Considerations for Proposing Mitigation
	End Use Products		
Spray Drift Buffer to Wildlife Conservation Areas For products that are applied as liquid with aerial (except Ultra Low Volume/ULV applications for mosquitocides), groundboom, or airblast equipment	Aerial (non-ULV): • "Do not apply within **[typically 50-150]** feet of any conservation areas (e.g., public lands and parks, Wilderness Areas, National Wildlife Refuges, reserves, conservation easements)." Ground: • "Do not apply within **[typically 15-50]** feet of any conservation areas (e.g., public lands and parks, Wilderness Areas, National Wildlife Refuges, reserves, conservation easements) unless using a hooded spray boom. When using a hooded spray boom, do not apply within **[typically 10-30]** feet of these protected areas." Airblast: • "Do not apply within **[typically 25-50]** feet of any conservation areas (e.g., public lands and parks, Wilderness Areas, National Wildlife Refuges, reserves, conservation easements)." All Application Methods Above: • "Applications are exempted from this spray drift buffer requirement when: 1) A 10-ft high windbreak is established between the field conservation area. For this exemption to apply, the windbreak must have single to multiple rows of trees and shrubs planted linearly between the field and the aquatic habitat in a manner that fully partitions the two areas; 2) The application is conducted by conservation area	Directions for use – Under the Restriction or Use Restriction Section	Pesticides applied to agricultural crops via liquid spray with terrestrial risk due to spray drift.

Description	Proposed Label Language for Pesticide Products	Placement on Label	Considerations for Proposing Mitigation
	End Use Products		
	personnel or persons under their direct supervision; or 3) The landowner or applicator has completed a consultation with U.S. Fish and Wildlife Service and/or the National Marine Fisheries Service on the use of the product."		

6. Pesticide-Treated Seed: Proposed Label Language and Considerations for Future Ecological Mitigation

The table below contains example instructions for seed treatment products currently being included in PIDs for pesticides registered for use in treating seed. Consistent with EPA's September 28, 2022 response to the treated seed petition filed by Center for Food Safety, these instructions will continue to be updated as EPA reviews currently registered pesticides. EPA also intends to issue an advanced notice of proposed rulemaking (ANPRM) to explore the option of a FIFRA section 3(a) rule to allow for enforcement of the misuse of pesticide-treated seeds.

As part of EPA's review of labels in registration review and to inform the ANPRM, EPA is considering a number of additional or changed instructions as options for reducing potential exposures to terrestrial vertebrates and invertebrates associated with treated seed uses. Examples of several options being considered are described in the following bullets. EPA requests comment on these options and any other ideas for reducing exposures to terrestrial vertebrates and invertebrates.

- Reducing pesticide dust-off: EPA is considering measures to reduce the potential for exposures to insect pollinators from treated seed dust-off. Reducing dust-off from treated seeds reduces the amount of the pesticide that abrades off the seed and that can contact insect pollinators.
    - For example, the Agency is considering whether to include instructions relating to requiring use of dust-reducing techniques and ways of measuring the efficacy of those techniques. One dust-reducing technique under consideration is applying a seed coating during treatment of the seed. If EPA proposes the use of this technique, a corresponding threshold for dust reduction and a means to measure the efficacy of the seed coating in dust-off reduction would be needed. An example of a measurement tool is the Heubach test, which measures the abrasion potential. Another dust-reducing technique under consideration is the use of fluency agents. Fluency agents increase flowability of treated seeds out of the hopper for more efficient planting, creates easier clean up, and reduces dust-off. EPA seeks comments on techniques and measurements that might be referenced in instructions to reduce dust-off. Labeling instructions do not currently address dust-off and thus instructions of this kind would be new.

- Burying spilled pesticide-treated seed: EPA is considering additional measures to reduce exposures to terrestrial vertebrates from ingestion of treated seed. Such measures could involve ensuring limited access to pesticide-treated seed that has been spilled during loading and planting by requiring a minimum depth for burying treated seeds spilled during loading and planting (such as in row ends). Current labels generally refer to covering or collecting spilled seeds.
    - A 2-foot depth for burying treated seeds appears to be a practical measure for growers to avoid disturbance during plowing that may also address risk to birds and mammals from eating treated seed. In some cases, a 2-foot burial depth has already been required (e.g., at 7 CFR § 301.89-12). EPA is interested in information on common practices for burial of spilled treated seed and the estimated impacts or concerns if including a set depth (e.g., 2-foot depth).
- Disposing of excess seed after planting: Other measures being considered to reduce exposures to terrestrial vertebrates from ingestion of treated seed, and to reduce potential groundwater or surface water concerns, include additional instructions relating to disposal of excess treated seed that would not be stored and used for future plantings. Such measures could include labeling instructions for the grower to contact the registrant for information on appropriate disposal and amended registration terms and conditions to require registrants to create disposal plans and educational materials for growers. A registrant disposal plan could include disposal options and bar or condition certain methods of disposal such as combustion or composting. Current instructions, as described in the table below, refer generally to burying excess seed away from water bodies.

Description	Proposed Label Language for Pesticide Products	Placement on Label
	End Use Products	
Seed Treatment Dye Statement	**"REQUIRED DYE STATEMENT** Seed treated with this product must be visually identifiable from untreated seed by the use of an approved colorant or dye to prevent accidental use of treated seed as food for humans or feed for animals. Refer to 21 CFR, Part 2.25. Any colorant or dye added to treated seed must be cleared for use in accordance with 40 CFR, Part 153.155(c)."	Directions for Use
Seed Treatment For products allowed for on-farm seed treatment (not for distribution or sale of the seed)	"**Use of On-Farm Treated Seed (when treated seeds are not for sale or distribution)** • Store treated seed away from food and feedstuffs. • Do not allow children, pets, or livestock to have access to treated seeds. • Plant treated seed into the soil at no less than [INSERT RECOMMENDED OR REQUIRED MINIMUM DEPTH]. Ensure that all planted seeds are thoroughly incorporated by the planter during planting. Additional incorporation may be required to thoroughly cover exposed seeds. • Treated seeds exposed on the soil surface may be hazardous to wildlife. Cover or collect treated seeds spilled during loading and planting (such as in row ends).	Directions for Use

	• Dispose of all excess treated seed by burying seed away from bodies of water. • Do not contaminate bodies of water when disposing of equipment wash water." [**Note to registrant**: All other requirements regarding the use of the treated seed, which include, but are not limited to, instructions relating to endangered species protection, environmental hazard statements, maximum use rates, soil incorporation depth, plant back intervals, personal protective equipment, and storage and disposal statements, remain and must be listed.]	
Seed Treatment Seed Bag/Container Labeling For products allowed for commercial seed treatment and on-farm seed treatment (to appear on seed bag tags when treated seeds are to be sold or distributed)	**"Commercial Seed Treatment and On-Farm Seed Treatment (when treated seeds are to be sold or distributed) – Seed Bag Labeling Requirements"** **"The Federal Seed Act requires that bags containing treated seeds shall be labeled with the following statements:** • **This seed has been treated with (insert name of active ingredient of pesticide).** • **Do not use for food, feed, or oil purposes."** **"The U.S. Environmental Protection Agency requires that bags containing treated seeds shall be labeled with the following statements. Any seed treated with [PRODUCT NAME] that is sold or distributed without these statements is an unregistered pesticide, in violation of FIFRA section 12.** This seed has been treated with [INSERT PRODUCT NAME(s) (EPA REG. NO(s))] containing [INSERT NAME(S) OF ACTIVE INGREDIENT(S)]. • The contents of this bag are for planting purposes only. Do not use for food, feed, or oil purposes. • Store treated seed away from food and feedstuffs. • Do not allow children, pets, or livestock to have access to treated seeds. • Plant treated seed into the soil at no less than [INSERT RECOMMENDED OR REQUIRED MINIMUM DEPTH]. Ensure that all planted seeds are thoroughly incorporated by the planter during planting. Additional incorporation may be required to thoroughly cover exposed seeds. • Treated seeds exposed on the soil surface may be hazardous to wildlife. Cover or collect treated seeds spilled during loading and planting (such as in row ends). • Dispose of all excess treated seed by burying seed away from bodies of water. • Do not contaminate bodies of water when disposing of equipment wash water.	Directions for Use

	• Dispose of seed packaging or containers in accordance with local requirements." [**Note to registrant**: All other requirements regarding the use of the treated seed, which include, but are not limited to, instructions relating to endangered species protection, environmental hazard statements, maximum use rates, soil incorporation depth, plant back intervals, personal protective equipment, and storage and disposal statements, remain and must be listed on the seed bag tag.]	

7. Promoting Pollinator Stewardship: Proposed Advisory Language

EPA is proposing to include revised advisory language for insect pollinators in its FIFRA actions. This advisory language distills the most important information growers need to know to voluntarily reduce risk to insect pollinators. The language is intended to raise awareness of potential hazard to bees and other insect pollinators. Although this language is advisory, the goal is to promote use best management practices that applicators may consider to reduce exposures to bees, particularly managed pollinators. This language is consistent with EPA's pollinator protection strategic plan.

Because the proposed pollinator language is advisory, EPA will not use it to refine its risk assessments for insect pollinators. EPA may consider mandatory mitigation to address on-field insect pollinator risk as part of proposed FIFRA actions and/or through its ESA mitigation strategies.

The pollinator hazard statement below would apply when there is acute risk to insect pollinators from agricultural crop uses of the pesticide. The language in the statement is derived from language in EPA's Label Review Manual and appears on many labels already. Additionally, the Agency is proposing a statement outlining best management practices for pollinator protection. EPA intends to propose this statement when the ecological risk assessment identifies acute or chronic risk to insect pollinators from agricultural crop uses of the pesticide. EPA seeks feedback on the example label language in the table below.

Description	Proposed Label Language for Pesticide Products	Placement on Label	Considerations for Proposing Language
	End Use Products		
Pollinator Hazard Statement For all products applied to agricultural crops.	**[EPA to choose either statement depending on whether the pesticide displays residual toxicity:** **Extended residual toxicity not displayed:]**	Environmental Hazards under the Heading "Pollinator Hazard Statement"	Pesticides applied to agricultural crops when there is acute risk to insect pollinators.

	"This product is **[highly/moderately]** toxic to bees and other pollinating insects exposed to direct treatment on blooming crops or weeds." **[Extended residual toxicity displayed:]** "This product is **[highly/moderately]** toxic to bees and other pollinating insects exposed to direct treatment or to residues in/on blooming crops or weeds."		
Best Management Practices for Pollinator Protection For all products delivered via liquid spray applications to agricultural crops.	**"Best Management Practices for Pollinator Protection** Following best management practices (BMPs) can help reduce risk to pollinators. To protect wild and managed pollinators, the following BMPs should be implemented: • Develop and maintain clear communication with local beekeepers to help protect honey bees. To the extent possible, advise beekeepers within a 1-mile radius 48-hrs in advance of the application, and confirm hive locations before spraying. • Avoid applications when bees are actively foraging. • Apply pesticides in the evening and at night when fewer pollinators are foraging. • Use Pollinator Protection Plans when they are available. These plans are developed by stakeholders within their respective states/tribes to promote communication between growers, landowners, farmers, beekeepers, pesticide users, and other pest management professionals to reduce exposure of bees and other pollinators to pesticides. • Report suspected pollinator pesticide poisonings via EPA's Pesticide Incident Reporting website: https://www.epa.gov/pesticide-incidents. For additional resources on pollinator BMPs and Pollinator Protection Plans, visit https://www.epa.gov/pollinator-protection/tools-and-strategies-pollinator-protection."	Directions for Use – Under the Best Management Practices header after Resistance Management section	Pesticides applied to agricultural crops via liquid spray when there is acute or chronic risk to insect pollinators.

8. Ecological Incident Reporting Label Language

EPA expects to regularly propose language for pesticide labels that would provide product users with consistent guidance on how to report ecological incidents, including bee kills. EPA has proposed and subsequently required ecological incident reporting language on some labels in the

past, and ecological incident reporting has been included as a reasonable and prudent measure in biological opinions issued by the Services that EPA is required to implement. EPA seeks feedback on the example label language in the table below. Additionally, EPA is requesting specific feedback on the following question:

- Are users or other people having any issues reporting bee or other ecological incidents to EPA?

Description	Proposed Label Language for Pesticide Products	Placement on Label	Criteria for Proposing Mitigation
	End Use Products		
Ecological Incidents Statement To be proposed for all products with outdoor uses	"**REPORTING ECOLOGICAL INCIDENTS**: For guidance on reporting ecological incidents, including bee kills, see EPA's Pesticide Incident Reporting website: https://www.epa.gov/pesticide-incidents"	Directions for Use, under the heading "Reporting Ecological Incidents"	All products with outdoor uses